

WEST**End of Result Set**☐ **Generate Collection**

L2: Entry 2 of 2

File: USPT

Mar 30, 1993

US-PAT-NO: 5198311

DOCUMENT-IDENTIFIER: US 5198311 A

TITLE: LNG cryogenic power generation system using molten carbonate fuel cells

DATE-ISSUED: March 30, 1993

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Nakazawa; Kenzo	Yokohama	N/A	N/A	JPX
Uematsu; Hiroyoshi	Yokohama	N/A	N/A	JPX
Hatori; Satoshi	Ibaraki	N/A	N/A	JPX

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
Ishikawajima-Harima Heavy Industries Co., Ltd.	Tokyo	N/A	N/A	JPX		03

APPL-NO: 7/ 704078

DATE FILED: May 22, 1991

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	2-140398	May 30, 1990

INT-CL: [5] H01M 8/04

US-CL-ISSUED: 429/20; 429/26

US-CL-CURRENT: 429/20; 429/26

FIELD-OF-SEARCH: 429/20, 429/26

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

☐ **Search Selected****Search ALL**

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/> <u>4588659</u>	May 1986	Abens et al.	429/20

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
2500217	August 1982	FRX	

OTHER PUBLICATIONS

Ishida, Patent Abstracts of Japan, 57-80674, May, 1982 (E-126, p. 103).
Azuhata, Patent Abstracts of Japan 56-69775, Jun. 1981 (E-71, p. 63).

European Search Report, EP application No. 9110 8578.5, Aug. 27, 1991.
Patent Abstracts of Japan, unexamined applications, M field, vol. 7, No. 149, Jun.
30, 1983 The Patent Office Japanese Government p. 104 M 225-Kokai-No. 58-59 303
(A) (Tokyo Shibaura Denki K.K.).

ART-UNIT: 117

PRIMARY-EXAMINER: Kalafut; Stephen

ATTY-AGENT-FIRM: Trexler, Bushnell, Giangiorgi & Blackstone, Ltd.

ABSTRACT:

An LNG cryogenic power generation system using a molten carbonate fuel cell is equipped with a CO.sub.2 separator. The CO.sub.2 separator takes advantages of cryogenic LNG in a manner such that CO.sub.2 among gases discharged from an anode chamber of the fuel cell is liquefied with cryogenic LNG and separated from the anode exhaust gas. Cell reactions take place at a cathode chamber and the anode chamber of the fuel cell to cause power generation as the oxidizing gas which contains CO.sub.2 is fed to the cathode chamber and the fuel gas is fed to the anode chamber. LNG is reformed by a reformer of the fuel cell and the reformed gas is fed to the anode chamber. During the cell reaction, CO.sub.2 of the oxidizing gas fed to the cathode chamber is transferred as carbonate ion to the anode chamber and CO.sub.2 is enriched or concentrated before expelled from the anode chamber. This anode gas is introduced to the CO.sub.2 separator. In the CO.sub.2 separator, CO.sub.2 among the anode gas is liquefied by cryogenic LNG and separated from the anode gas. As a result, the power generation and the CO.sub.2 recovery are carried out at the same time, and an amount of CO.sub.2 discharged to atmosphere is remarkably reduced.

28 Claims, 5 Drawing figures